Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu

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ESTIMATING HEALTH IMPACT OF EXPOSURE TO $PM_{2.5}$, NO_2 AND O_3 POLLUTANTS USING AIRQ+ MODEL IN KERMAN, IRAN

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Abstract

Air pollutants have harmful effects on the human health and exacerbate morbidity and mortality. The aim of this study is to assess the short-and long-term effects of the suspended particulate matter with the diameter of smaller than 2.5 μm ($PM_{2.5}$), nitrogen dioxide (NO_2), and ozone (O_3) on the mortality cases in city of Kerman in 2016 and 2017. In this study, AirQ+ software presented by European Center for Environment and Health and World Health Organization (WHO) was employed. Daily mean concentration of $PM_{2.5}$, mean hourly concentration of NO_2, and maximum 8-h O_3 concentration were used to assess the health impact of human exposure to these pollutants. The mean concentration of $PM_{2.5}$, NO_2, and O_3 in the studied years was higher than the WHO guideline and the mean concentration of NO_2 and O_3 was less than the WHO guideline. In the short-term health impact assessment, the death caused by stroke in individuals above 25 years old due to O_3 had the highest attributable proportion with 2.48% in 2016 and 2.39% in 2017.Also, in the long-term health impact assessment, the highest attributable proportion for natural death caused by $PM_{2.5}$ was 15.24% in 2016 and 15.15% in 2017.
In general, exposure to air pollutants is a risk factor; therefore, the implementation of sustainable control policies including population growth, urbanization, and traffic control is suggested to avoid the health impacts and economic damages.

Key words: air pollution, health outcomes, long-term impact, meteorological, mortality, short-term impact

Received: September, 2019; Revised final: March, 2020; Accepted: April, 2020

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